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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,529	07/30/2001	Kazuhiko Hayashi	01FN046US	9042

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
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2652

19

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/916,529

Applicant(s)

HAYASHI ET AL.

Examiner

William J. Klimowicz

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>15</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

Claims 1-3 and 5-9 are currently pending.

Claims 4 and 10-63 have been voluntarily cancelled by the Applicants.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to amended claim 6, the new recitation of “an underlying layer for said free layer provided under said free layer, and said underlying layer for said free layer being in contact with said free layer and said vertical bias layer” in conjunction with the previously recited structure of claim 6 (e.g., “a magnetic layer provided on the lower conductive layer” and “a free layer provided on the magnetic layer”) is not disclosed anywhere in the elected embodiment (i.e., Species 1c corresponding to FIG. 12 - see Paper No. 10, filed by Applicants on May7, 2003) as elected by the Applicants in response to the restriction requirement previously set forth by the Examiner. Thus, the metes and bounds of the claims cannot be readily ascertained within the scope of the elected embodiment of FIG. 12, since here is no correlation between the elected

Art Unit: 2652

embodiment and the claims 6-9 as presently drafted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Redon et al. (US 6,469,879).

As per claim 1, Redon et al. (US 6,469,879) discloses a magneto-resistance effect element (1) comprising: a lower conductive layer (71); a free layer (20 and/or 23) provided on the lower conductive layer (71) and having an orientation of magnetization varied by a magnetic field applied thereto (e.g., see COL. 5, lines 37-39); a non-magnetic layer (30) provided on top of the free layer (20 and/or 23); a fixed layer (40) provided on the non-magnetic layer (30) and having a pinned orientation of magnetization (e.g., COL. 5, lines 38-43); and a vertical bias layer (61), provided on said lower conductive layer (71), for applying a magnetic field to said free layer (20 and/or 23), and said free layer (20 and/or 23) is greater in length (L_f) in the direction of a magnetic field (i.e., the longitudinal direction as depicted by biasing fields (α_1)) applied thereto by said vertical bias layer (61) than said fixed layer (40) (length L_p), and a sense current for detecting a change in electrical resistance of said non-magnetic layer (30) flows substantially in perpendicular relation to said non-magnetic layer (30) (e.g., see COL. 7, lines 33-35).

Additionally, an underlying layer (e.g. 21, 22) is provided for the free layer (e.g., 23) and is provided under said free layer. The layer comprising films (21 and 22) is construed as an “underlying layer” since it is a layer which underlies the free layer by being deposited directly underneath the free layer (23). The underlying layer (21, 22) for the free layer in contact with said free layer (e.g., 23) and said vertical bias layer (61) (cf. FIGS. 2 and 3).

As per claim 2, said lower conductive layer (71) has a recessed portion on an upper surface thereof, and said vertical bias layer (61) is provided so as to allow at least part thereof to be buried in said recessed portion (e.g., see FIG. 2).

As per claims 3, at least part of said free layer (20) is in direct contact with said vertical bias layer (61).

As per claim 5, further comprising a vertical bias layer protective layer (e.g., (93)) provided on said vertical bias layer (61), and said vertical bias layer protective layer (93) is in contact with said vertical bias layer (61) (e.g., see FIG. 2), and said vertical bias layer protective (93) is in contact with layer of at least one of said free layer (20 and/or 23) and said underlying layer (21, 22) for free layer (23).

Response to Arguments

Applicants’ arguments with respect to the pending rejected claims have been considered but are deemed nonpersuasive.

The Applicants allege that “there is no indication in Redon on an underlying layer.” The Applicants further state that “[t]he Examiner suggests that items 21 and 22 in Figure 3 are underlying layers for the free layer, but this is incorrect. The description in Figure 3 is of the

Art Unit: 2652

non-magnetic layer, showing how it may be used. In contrast, the present invention uses the underlying layer, for example, to allow the vertical bias layer to apply a vertical bias magnetic field layer more effectively." See Applicants' arguments on page 43 bridging page 44 of Paper No. 16, filed September 22, 2003.

The Examiner respectfully disagrees with the Applicants. More concretely, as set forth in the rejection, *supra*, Redon et al. (US 6,469,879) discloses an underlying layer (e.g. 21, 22) which is provided for the free layer (e.g., 23) and is provided under said free layer (23). The layer comprising films (21 and 22) is construed as an "underlying layer" since it is a layer which underlies the free layer by being deposited directly underneath the free layer (23). The underlying layer (21, 22) for the free layer in contact with said free layer (e.g., 23) and said vertical bias layer (61) (cf. FIGS. 2 and 3).

The Applicants appear to believe that their "underlying layer" somehow is structurally and/or functionally different, or perhaps, formed of a different composition from the underlying layer of Redon et al. (US 6,469,879), as interpreted by the Examiner.

It is noted, however, that all the claims require is an underlying layer, which no other structural or functional or compositional attributes associated with it. Thus, the Examiner has interpreted the underlying layer in a broad, yet reasonable manner, that is completely consistent with the plain and ordinary meaning of the term "underlying."

Note, the Applicants do not point to an express definition within their specification that would preclude this broad, yet reasonable interpretation.

Art Unit: 2652

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

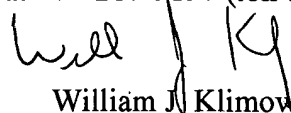
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (703) 305-3452. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2652

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William J. Klimowicz
Primary Examiner
Art Unit 2652

WJK